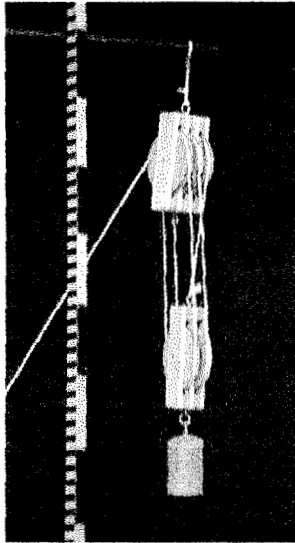


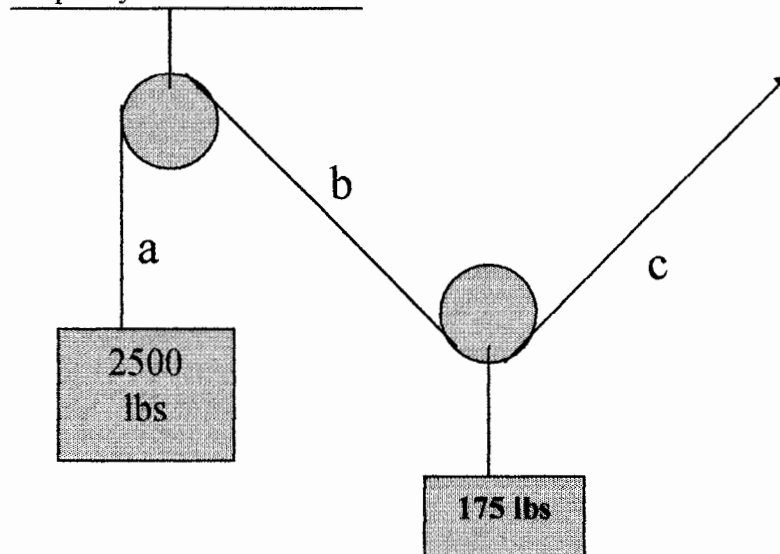
Practice Test#5
Engineering and Physics Part II

1.



This block and tackle has 8 lines and is expected to carry 1500 lbs. How much force, as shown, will be required to lift the load?

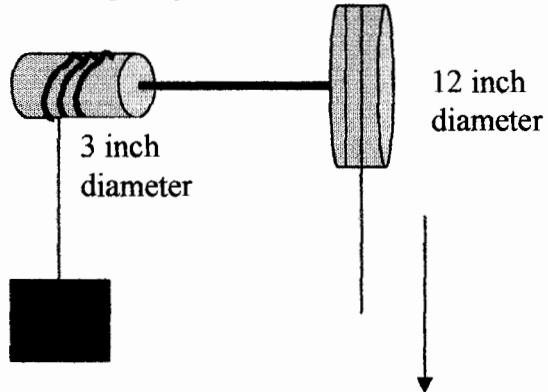
2. What is the amount of force on c, then, to pull the 2500 lb load in the system? Assume pulleys are frictionless.



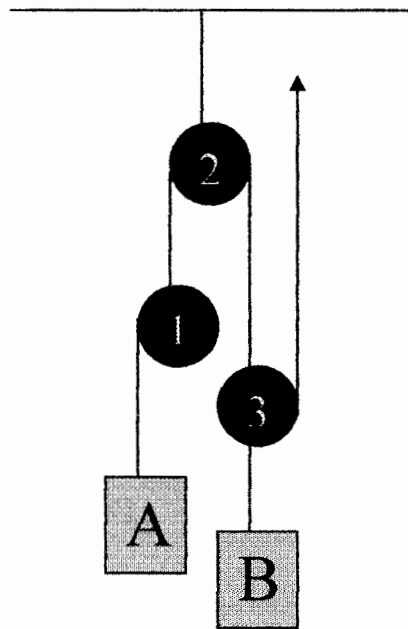
~~3. A 2 rope sling is supporting a 11,500 lb load. If the sling angle to the load is 60 degrees, how much force is imposed on the left sling?~~

IGNORE

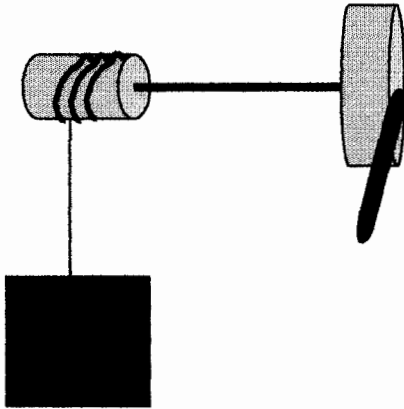
4. A 3-inch diameter pulley is a line to a 250 lbs load. The 3-inch pulley is then attached with a rod to a large 12-inch pulley. How much downward pull with the rope on the large 12-inch pulley do I need to lift the 250 lbs load up?



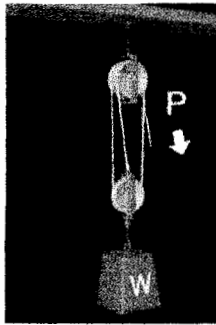
5. If load A is 200 lbs and load B is 74 lbs, how much upward force do I need to pull to keep the loads in equilibrium?



6. A handle measuring 12 inches is attached to this 6 inch large pulley. There is a smaller 3 inch pulley. How many of pounds of force is required on the handle to lift the object weighing 230 lbs?



7. A newbie who only weighs 135 lbs shows up to work at a construction site. The supervisor breaks him into the job by having him lift 450 lbs of cement bags to folks on a higher level. How much downward force is needed to lift the load assuming that the newbie only has a maximum pulling force of 115 lbs?

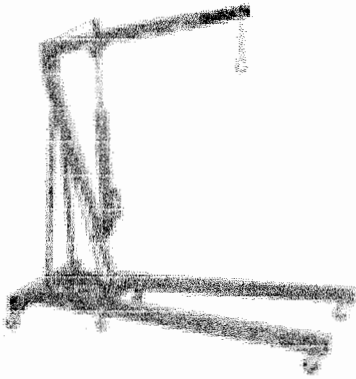


8.



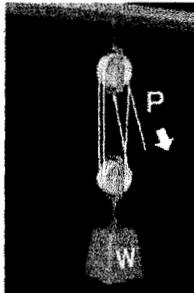
A boom operator is asked to lift a 114,000 lb load onto a tractor trailer. His wire rope is 8 parts line, diameter of 1.5 inches, and the pulley has friction factor of 20%. The boom operator lost his operator's manual so you do not have any idea what the Safe Working Load is. The wire rope looks in very good condition, though. Assuming that you want the wire rope SWL to be 5 times the load as a good safety measure, can the operator safely lift this load within the estimated SWL that you calculate?

9.



This mobile lifting device is needed to lift a large automobile engine. The engine with an attached heating block is approximately 1150 lbs. The wire rope here is 4 parts line and the pulley has a 15% friction factor. Again, the auto shop lost the manufacturer's operator manual. Based upon the estimated SWL, can this device safely lift the engine in question assuming that you want a 5 to 1 ratio between the SWL and the engine weight. Diameter of the wire rope is 1.0 inches.

10.



Newbie is back on the job. This time, the supervisor rigs a different pulley. Using the same 450 lb cement bags being lifted up to a higher level, can Newbie do it? Note that because Newbie is still hurting from yesterday's job, he is only able to give a force of only 90 lbs.